

RECENT LITERATURE

Sexual Behavior in Penguins.—L. E. Richdale. (University of Kansas Press, Lawrence), i-xi, 1-316, 22 photographs, 5 graphs, 1 map, 57 tables, 6 appendices, literature cited, index, 1951. Price, \$5.00.—This book deals with the relations between members of the same or opposite sexes that involve actions of both aggressive and "love-habit" nature. The study was carried over ten seasons, 1936 to 1946, of intensive field work on the Otago Peninsula in New Zealand. Special attention is given to the Yellow-eyed Penguin, *Megadyptes antipodes*, but reference is also paid to corresponding behavior in other penguins and in other birds so that the discussions of concepts have general application. Altogether, some 292 matings were observed between 88 male and 96 female Yellow-eyed Penguins. All birds were banded, and the home-made bands bore numbers sufficiently large to be read through a telescope as far as 120 feet away.

Both love-habits and aggressive behavior have value in social relations, in pair-formation, and in family affairs. Aggressive behavior also functions against predators and as warning. Love-habits are of various sorts which are designated as: salute, sheepish look, throb, shake, excited shake, open-yell, half trumpet, welcome, full trumpet, arms act, mutual preen, kiss-preen, bowing, and ecstatic. Aggressive behavior is described as tête, open yell, sheepish look, glare, and physical force. Substitute activities occur commonly as the result of antagonistic drives, lack of proper stimulation for the reaction to be expected, exhaustion of normal reactions, or physical inability to respond with the proper behavior. Each type of behavior has a special significance in the life of the bird, and the description, illustration, and analysis of the circumstances and the sequences in which these various behavior-traits occur are the essence of this book.

Pair-formation may occur at any time of the year in the Yellow-eyed Penguin but most commonly in the winter at the peak of the sexual phase. The birds appear to have a definite and continuing recognition of each other as individuals, and there is immediate recognition of sex without "trial and error." The adornments on the head and neck have no function relative to love-habits but may be useful at sea in enabling the bird to recognize its own species. Love-habits keep the birds mutually stimulated, but copulation occurs when the female is ready and not as the direct result of any special stimulation by the male. The gonadal development of the female and the laying date appear also not to be influenced by the male. Copulation may occur at intervals during the pre-egg stage but ceases a day or two before the eggs are laid. The female is receptive of coition only at intervals, but the male is sexually ready at all times. Continuing love-habits hold the sexes together throughout the nesting period. Love-habits have a further function in bringing unmated birds together to get acquainted, which may ultimately result in pairing. The initiative for pairing may come from either sex. Some individuals appear to have an affinity for each other that affects pairing. Affinity between an unmated bird and one of a pair may lead to "divorce" of the pair. Other causes of divorce are the dominance that may be exerted by one bird, usually an unmated male, over a pair and the prolonged absence of one member of a pair.

Fifty-five per cent of matings remain intact in the succeeding season, 33 per cent break up because of death or disappearance of one or both birds, and 12 per cent of the birds separate and remate with other individuals. One pair remained intact for 11 seasons. Probably remating actually occurs each season, even in pairs that remain intact, but this is facilitated by return of birds to the old nesting-site, recog-

dition of each other, and personal attachment. Owing to a surplus of males, there is competition and intrasexual selection among the males for mates. Females seldom remain unmated, and there may be some competition for particular mates also among the females. The normal breeding age is three years, but 22.8 per cent of recovered two-year olds are known to have bred.

There is very little evidence of social hierarchy beyond the low level of "super-sedence" in the loose colonial groups of penguins. Some degree of dominance is involved, however, when one male acquires the mate of another over the other's objection. Territory is expressed in the defense of the actual or potential nest-site, the nest and its contents, chicks out of the nest, and the mate. The male usually does the fighting for territory, although the female helps in some cases. Both sexes fight among themselves over sex-partners and together against enemies. Sexual fighting largely ceases once the eggs have been laid and does not begin again until the departure of the young. It may occur at any other time of the year when the birds are ashore.

"Unemployed" birds, so-called, are those without eggs or chicks at the time mated pairs have them. The causes of unemployment among various species of birds are immaturity, unbalanced sex-ratio, and loss of mate, eggs, or young. Non-breeding birds constituted 35 per cent of the total population over a period of years. Unemployed birds are tolerated by the breeding birds as long as they do not infringe on territories. Love-habits occur among these birds at all times of year, and "trumpeting" is far more prevalent with them than with the nesting group. The presence and competition of these unemployed but potentially breeding birds in the nesting community probably raises the level of mating efficiency and is of advantage to the species as a whole.

Incubation of the two eggs averages 42 days and is performed alternately by each sex. Attentive periods vary from one to five days but average about 1.8 days. There is a ceremony of nest-relief. As a rule both eggs hatch on the same day. The chicks are continuously brooded by both parents for the first two weeks but less regularly thereafter and not at all after the fourth week. One or the other parent guards the young during the day until the end of the sixth week but after that only at night. The second chick at one nest entered the sea approximately four months after hatching. Both parents share equally in watching and feeding the young. The chicks are fed at least once daily. There is no regular starvation period to induce grown young to leave for the sea. Both parent penguins and chicks recognize each other by sight or hearing. The Yellow-eyed Penguin does not form crèches, and the author suggests that in the communistic groups of young and old in some other species each parent may possibly feed only its own young and that surplus adults may be "unemployed" individuals.

In February, after nesting is over and the chicks have departed, there are about 23 days when the adults feed excessively and become very fat. This immediately precedes molting. The duration of the molt is usually 24 days, during which time the birds remain ashore and do not feed. Since most breeding birds begin their molt in March, this is the time of year when body weights are highest. Unemployed birds ordinarily molt earlier, occasionally as early as January. Molting is over in all birds by May. Body weight during this non-feeding period drops from 17.1 to 9.4 lbs. However, normal weight is regained by June and reaches another peak in August. There is special interest that in this resident penguin there is the same development of heavy deposits of fat prior to nesting that occurs in some passerine species just before migration. From late August to early October there is a second

fasting period as the adults are occupied with mating, nesting, and egg-laying. During incubation, as the birds take regular turns at feeding, there is gradual recovery of weight. Hatching occurs in November and body weight of the adults is generally maintained during the period of care of the young. During most of the year the male is heavier than the female. There is, however, no sure way of distinguishing sex by weight or by other measurements due to overlap in characteristics, although sex can be determined by examining the vent just after the eggs are laid.

A long summary would be necessary to give adequate justice to the great mass of carefully detailed information that is made available in this book. There is evidence on every page that the author is keen in his observations, penetrating in his analysis, and conversant with related information on other species. The result is not only a thorough treatise of sexual behavior in one species, but also a useful summary for penguins as a group and a fundamental discussion applicable to birds in general with which any student of this phase of ornithology needs to be familiar.

The author is very precise in his use of terms and gives each a very definite meaning. He follows J. S. Huxley in using "love-habits" instead of "courtship" since such behavior extends throughout the year and is not necessarily confined to behavior preparatory to pair-formation or coition as courtship may imply (p. 45). Elsewhere however (p. 6), he states that "in this paper 'courtship' is synonymous with love-habits." Not everyone will agree with all his usages of terms. The reviewer does not believe it necessary to distinguish between "territory" and "property-rights." This is done on the assumption that territory is a fixed, permanently located "defended area" and does not apply to the defense of a bird's mate, potential mate, or offspring when not on the immediate nest-area (p. 152). The term, territory, has, however, been used in the latter sense (D. W. Jenkins, *Auk*, 61: 30-47, 1944), and there is no good reason why it should not continue to be so used. The term "non-breeding," has been used commonly by other students in nearly the same sense that the author uses "unemployed" and would seem to be sufficiently inclusive. The reason given for the new term is to include those birds which, because of loss of eggs or chicks, are not actually nesting at the time of observation as well as the "true non-breeding birds" that do not nest at all during the season (pp. 7, 215). Perhaps "divorce" is an anthropomorphism and not a good term when applied to birds. "Separation" would have been better. Divorce in human affairs involves legal action that formally recognizes that a separation has taken place. Likewise the author makes the term include the mating of one of the pair with a third individual (p. 7). This is something quite different and does not in other species necessarily follow separation. These are, however, minor points and the book is recommended to the attention of all.—S. CHARLES KENDEIGH.

The Learning Abilities of Birds.—W. H. Thorpe. *Ibis*, 93 (1): 1-52; and 93 (2): 252-296, 1951. This is a comprehensive paper presenting the modern approach to the study of animal behavior, based on the work of Craig, Heinroth, Lorenz, and Tinbergen. In the introduction the nature of inborn behavior is discussed. The automatic response of an animal to its environment may be reflex, a kinesis, or a taxis. The first is defined as a "quick, automatic response of a single organ or organ system . . . to a simple stimulus." A kinesis is an undirected locomotory reaction, while a taxis is a directed reaction. In instinctive behavior "inborn stereotyped movements and patterns of action play a major part; . . . they are usually associated with an inherited disposition to recognize, and pay particular attention to, certain environmental situations which set off this instinctive behaviour and which are now generally known as 'releasers,' "(p. 3). Dr. Thorpe uses this last term in a

wide sense for he extends it "to cover all environmental patterns which govern the emergence of instinctive actions, such as the appearance of the normal territory, or the kind of landscape which constitutes the normal environment of the species," (p. 8).

Learning is defined as "adaptive change in individual behaviour as a result of experience" (p. 8). Eight main types of learning are discussed: habituation, conditioning, trial-and-error, insight learning, imitation, imprinting, "some learning abilities of doubtful significance (individual recognition, tameness, 'alternative' nesting associations)", and memory.

Let us consider learning with the newly-hatched bird. Habituation, imprinting, and trial-and-error are the first categories to function. Habituation is "the simplest kind of learning . . . a simple learning *not* to respond to stimuli which tend to be without significance in the life of the organism," (p. 10). Thus the altricial nestling learns to restrict its begging responses to its parents. When fledged, habituation enables it to ignore stimuli that are unimportant to it. Habituation, however, does not blunt a bird's instinctive response to the appearance of a primary enemy. Imprinting is important with many precocial birds, a learning of the parent and brothers-and-sisters (normally its own species) to which later social and sexual responses will be made. It is by trial-and-error that the young bird learns what is edible, that water is good for drinking and bathing, and, after it starts to fly, how to land.

Social facilitation (treated under "imitation") is important in families of precocial birds in the matter of adjusting to the environment. It is also the method by which young birds learn from parents and associates to recognize certain enemies. "Individual recognition" of brothers and sisters and of parents often comes within a week or two with precocial young.

Memory of places is excellent in birds, as is memory of individuals with certain species. Memory for occasions of extreme fright and for enemies may be long. Under "conditioning" Dr. Thorpe includes only the "classical conditioned reflex" and he rightly points out "how artificial and isolated" this is (p. 14). Evidence for true imitation is slight. Twenty-two pages are devoted to insight learning under eight sub-headings, of which perhaps the most important are "territorial learning as latent learning," "tool using," and a detailed discussion of the "number concept," in which Otto Koehler's experiments are summarized. "Two pre-linguistic faculties—simultaneous, and successive unnamed number sense—have been demonstrated in some species of birds." Experiments on human beings indicate that "the limit of achievement is of the same order as that shown by birds." "Very many ideas come to us in wordless form, as they must do with birds and other animals; the essential difference is that we can recount ideas afterwards in words and animals cannot," (p. 48).

It is not clear to me how Dr. Thorpe classifies that fundamental type of learning which might be called the positive side of habituation, as when domestic fowl come running at their owner's call, or baby Wood Ducks, *Aix sponsa*, learn that a certain clucking of their foster mother hen means food. This used to be considered a matter of association, and more recently has been called conditioning, using the term in a wider sense than that employed by Pavlov.

A very interesting section is that on "Song acquisition as imprinting." As is well known, in some species with simple songs the song is inborn, but with others it has to be learned. If such a bird does not hear its own species, it will adopt songs of other species, but once it hears the proper song it will quickly adopt it, according to Heinroth. A Danish ornithologist, H. Paulsen, has found that Chaffinches, *Fringilla*

coelebs, learn their song in the early spring of their second year. Dr. Thorpe deplors the lack of detailed observations on this subject of the acquisition of song.

Nowhere does Dr. Thorpe clearly define imprinting. He says: (1) it is "extraordinarily stable;" (2) it is most evident during "a very definite and brief period of the individual life;" (3) it is "characteristic of the first hours or days of life;" and (4) it is "a learning of the broad characteristics of the species," (p. 260). Tinbergen (1942: 83) calls it "an extreme case of learning ability confined to a critical period," and this better fits a broad view, for this critical period would come in the second and third weeks with some altricial nestlings for Dr. Thorpe's fourth point, and many months after hatching if learning of territory and song are to be included under imprinting, as is suggested in the present paper. As to the first point, my experiences at the Delta Waterfowl Research Station in Manitoba with ducklings (incidentally not one of the 27 newly-hatched individuals of eight species displayed fear of a human being) showed that "imprinting" could be easily lost. Dr. Thorpe states that the subject of imprinting "needs, and would repay, full and precise experimental investigation almost more than any other aspect of animal behaviour," (p. 266).

The paper concludes with a ten-page bibliography. Dr. Thorpe has presented a most valuable review article on this important subject, organized and presented in masterly fashion. It is an important contribution to the study of bird behavior and one which will be particularly enlightening to us on this side of the Atlantic.—MARGARET M. NICE.

Vertebrate Ecology of Arno Atoll, Marshall Islands.—Joe T. Marshall, Jr. Scientific Investigation in Micronesia, Pacific Science Board, National Research Council, Washington, D. C., ii-38 pp., 4 figs. (mimeographed) November, 1950.—Since World War II, American biologists have been conducting numerous investigations in the Pacific, and the Pacific Science Board, ably coordinated by Mr. Harold J. Coolidge, has been one of the leading organizations at work there. The author of this report, Joe T. Marshall, Jr., was well chosen for this project in Micronesia because of his previous field experience there in World War II, when he observed and collected vertebrates in the Mariana and Palau islands (for birds see *Condor*, 51: 200-221. 1949).

Biologists have long been intrigued by the terrestrial organisms living on the dot-like, oceanic islands of Micronesia, knowing that for animals to reach these islands they must either cross or be carried across a vast expanse of salt water. Arno Atoll is located in the extreme eastern part of Micronesia, and its impoverished land fauna reflects this isolation. Marshall, who worked there from early June to early September, 1950, recorded nine kinds of reptiles, seven kinds of mammals and fourteen kinds of birds. He obtained representative specimens and both external and internal parasites from these animals. References to birds in his report are included under headings as follows: "Accounts of Species," "Time of Activity," "Seasonal Behavior," and "General Remarks on Carrying Capacity." A discussion is given of the habits, foods, and population densities of five sea birds, five shore birds, one fresh water bird, two native land birds and the domestic chicken. Of special interest are the comments on the Micronesian Pigeon, *Ducula oceanica*. Marshall's observations indicate that this large bird is present in fair numbers and is not near extinction in the Marshall Islands, as previously supposed. Bird skins and skeletons have been deposited in the United States National Museum and in the collection of the Department of Zoology, University of Arizona. It is hoped that Dr. Marshall will publish (as opposed to mimeograph) his account of the birds; it is an important contribution to Pacific biology.—ROLLIN H. BAKER.

Rocky Mountain Naturalists.—Joseph Ewan. (Univ. Denver Press, Denver, Colo.) xiv + 358 pp., 9 illus., December 19, 1950. Price \$5.00.—An exhaustive compendium commencing with an historical preview of avenues of penetration to the Timpanogos [Utah] and the North Pacific. The book is then divided into two sections. The first consists of detailed biographies with portraits of nine leading naturalists: Edwin James, John Charles Fremont, Charles Christopher Parry, Edward Lee Greene, Thomas Conrad Porter, Harry Norton Patterson, Marcus Eugene Jones, Eugene Penard, and Theodore Dru Alison Cockerell, in the order listed and occupying 103 pages. Explanatory notes and bibliography accompany this section. The second portion is a roster in biographical dictionary form of 798 natural history collectors. The entries are both biographical and bibliographical thus indicating not only who the individuals were or are, but when and where they lived or live, what they may have done to advance the biological sciences, their principal publications and sources of information. The length of the entry is not an indication of the true importance of the person for should he be well known and included in other books of reference, Ewan's remarks are brief; obscure persons in contrast are treated more fully as original information is given. The period covered is 1682 to 1932.

The author being a botanist, the book leans heavily in that direction, and Colorado, his former place of residence, is the favored state of the region. The roster should prove of value to ornithologists not only for identifying bird collectors and students but also in tracing areas where collections were made and determining where type specimens may have been collected.

In gathering his material, Ewan was necessarily dependent largely upon the literature and, it being a tremendous task to cover all fields, omissions are made in the write-ups of several people, at least in the Utah area with which the reviewer is familiar. This may be partly because of reluctance to duplicate material contained elsewhere. As a consequence a true picture of the individual's contribution is sometimes not presented. This book will serve as an invaluable reference and regional guide.—WILLIAM H. BEHLE.

The Life of Vertebrates.—J. Z. Young (Oxford Univ. Press, New York), pp. xv + 767, 497 figs. December 7, 1950.—This book is an attempt to portray the organization and evolution of life in the different classes of vertebrates, as well as in the protochordates. Anatomy, embryology, physiology, ecology, psychology, and paleontology are discussed in varying degree. The result is a well-rounded text in vertebrate zoology.

Of special interest to ornithologists is the 100-page section on birds. In many ways this section is admirably set up. It includes consideration of most aspects of bird life, although very briefly in some instances, and is particularly modern and complete in its treatment of flight, of the nervous system, and of certain features of behavior. If all aspects of feathered life were handled as well as these, the part on birds would make a good textbook of ornithology, which I think is one of the most urgent needs in this field today. We have many "bird books," for field identification, for distribution, for display of photographs, and for "interesting" items about birds, but we have not one, up-to-date general work, in any language, on the biology of birds, with the possible exception of the French "Oiseaux: traité de Zoologie" reviewed on page 537 of this number of 'The Auk.'

The author was no doubt limited by space as to the details he could include, and he was, of course, writing a general book on vertebrates, but some deficiencies in the avian section should be pointed out. Food habits are discussed only in relation to

adaptive evolution in Darwin's finches, and to bill structure in general, the palatal grouping of primitive birds is retained, despite the independent findings of Hofer in Vienna (*Acta Zool. Internat'l. Tidskr. Zool.*, 30: 209-248, 1949) and McDowell in the United States (*Auk*, 65 (4): 520-549, 1948) that this grouping is largely untenable. Under "the stimulus to migration" one finds mention only of the work of Rowan and this is not listed in the bibliography for the chapters on birds, which incidentally is woefully inadequate. It has only 18 titles, and these are compilations, not original papers.

Nesting, parental care, function of sounds produced, structure and function of the respiratory system, and social parasitism are other subjects that would have benefited by more complete treatment and by more use of papers published in the last 10 to 15 years.—H. I. FISHER.

Oiseaux: Traité de Zoologie.—Ed. P.-P. Grassé. (Masson et Cie., Paris), Vol. 15: 1-1164, 1950. Price, 6000 francs. This book is a collaborative effort. The contributors and chapter headings are: N. Mayaud, skin and other external features, longevity, biology of reproduction, alimentation, vocal and other sounds, behaviour and social life; A. Portmann, skeleton, nervous system, sense organs, circulation of the blood, respiratory system, digestive tract, body temperature and homothermy, postembryonic development; E. Oehmichen, muscular system, flight, terrestrial and aqueous locomotion; A. Rochon-Duvigneaud, eyes and vision; P.-P. Grassé, uropygial gland, organization of bird societies; J. Benoit, endocrine glands, urogenital organs, reproduction—sexual characters and hormones determining the seasonal sexual cycle; R. Matthey, chromosomes; J. Pasteels, embryonic development; F. Bourlière, ecology, physiology of migration; J. Piveteau, origin and evolution of birds; J. Berlioz, systematics, geographic distribution, general aspects and origin of migration; É. Letard, origin of domestic birds.

The various phases of ornithology are treated as extensively as is permissible for a single handy volume, and the book can be read with profit to obtain a broad grasp of the science. It is to be expected that some of the greatest differences of opinion will arise on classification. J. Berlioz, while granting the close relationship of the Coraciiformes and Caprimulgiformes to the Strigiformes, deplors the separation of the latter from the Accipitriformes (Falconiformes) as is done in some modern classifications.

The volume is similar in the arrangement of subjects to Stresemann's 'Aves' (1934) and offers the advantage of having the information brought up to date. The illustrations are numerous and excellent. Greater care could have been exercised in reading the proof. Even a reader with a good command of English will be puzzled by the following reference (p. 756): 'Pawing [pairing] responses of freeliving [free-living] valley Quail. . .'.—A. W. SCHORGER.

A Bibliography of the Published Writings of William Brewster.—Charles Foster Batchelder. *Mem. Nutt. Orn. Club.*, No. 10: 1-54. February, 1951. Price \$2.50.—In the very brief introduction, Brewster is credited with doing more than any of his contemporaries to raise the standards in all fields of ornithology. His career and published writings came at a time when American ornithology was developing rapidly. It is pleasing, therefore, to see made available, in careful, briefly annotated style, this bibliography. There is an index to "technical names introduced by William Brewster."—H. I. F.

Bonner Zoologische Beiträge.—Volume 1, Number 1 of this journal appeared in August, 1950; Numbers 2 to 4 were published in March, 1951. It is published by

the Zoologisches Forschungsinstitut and the Museum Alexander Koenig, Bonn (Dr. Adolf von Jordans and Dr. Heinrich Wolf) under the editorship of Dr. Günther Niethammer.

Although it is a general journal, covering the field of zoology, ornithologists will find much to interest them. This first volume contains papers on birds by H. Mildemberger, A. Hoffman, H. E. Wolters, P. A. Clancey, E. Stresemann, L. v. Boxberger, B. Rensch, F. Frank, K. Steinparz, and E. Schüz, dealing with many aspects of distribution, natural history, flight, taxonomy, and anatomy (see titles listed under above authors for more detailed information).—H. I. F.

- ADAMS, LOWELL. 1951. Confidence limits for the Petersen or Lincoln index used in animal population studies. *Journ. Wildl. Manag.*, **15** (1): 13-19.—Essentially a re-write of an earlier paper by Clopper and Pearson.—J. J. H.
- ALEXANDER, W. B. 1951. The index of heron population, 1950. *Brit. Birds*, **44** (4): 123-126.—Nesting populations of *Ardea cinerea* in the British Isles increased 14 per cent in 1950 over 1949; a chart shows the steady increase in the last three years after the very severe winter of 1946-47.—M. M. N.
- ARMSTRONG, EDWARD. 1951. Discharge of oily fluid by young Fulmars (A supplementary note to "Field studies on the Fulmar," by Eric Duffey). *Ibis*, **93** (2): 245-251.—Suggests that the squirting of oily fluid by young Fulmars is a defense mechanism chiefly against winged predators.
- ARMSTRONG, EDWARD. 1951. The significance of a dark ventral surface in certain birds. *Ibis*, **93** (2): 314-315.—A reply to a note by Meinertzhagen in *Ibis*, **93** (1): 140. The examples cited by Meinertzhagen do not appear to be in conflict with the author's theory that "the tendency to evolve dark underparts is correlated with display behaviour in which another bird is sufficiently near for the adornments to have a stimulating effect upon it."
- AVELADO, RAMÓN, AND HNO. GINÉS. 1949. Ave Nueva para la Ciencia. *Novedades Científicas, Contrib. Oc. Mus. Hist. Nat. La Salle (Caracas) Ser. Zool.*, No. 1: 1-3.—*Myrmeciza laemosictia venezuelae*, new subsp. from Cerro Ayapa, Estado Zulia, Venezuela.
- AVELADO, RAMÓN, AND HNO. GINÉS. 1951. Seis Aves Nuevas para la Avifauna Venezolana. *Novedades Científicas, Contrib. Oc. Mus. Hist. Nat. La Salle (Caracas) Ser. Zool.*, No. 4: 1-5.
- BAGENAL, T. B. 1951. Birds of the North Atlantic and Newfoundland Banks in July and August, 1950. *Brit. Birds*, **44** (6): 187-195.
- BAILEY, ALFRED M. 1951. Notes on the birds of Midway and Wake Islands. *Wilson Bull.*, **63** (1): 35-37, 1 photo.
- BARBOUR, ROGER W. 1951. Observations on the fall and winter food of Bobwhite Quail in Kentucky. *Journ. Wildl. Manag.*, **15** (1): 108.—In 331 stomachs of *Colinus virginianus*, *Lespedeza stipulacea* ranked 25 per cent by volume, *Ambrosia artemisiifolia* 17 per cent, and corn, *Zea mays*, 9 per cent.
- BENSON, C. W. 1950. The occurrence of the European Shoveller *Spatula clypeata* (Linnaeus) in South Africa. *Ostrich*, **21**: 56-57.—With remarks on loss of male plumage in tropical waterfowl.
- BENSON, C. W. 1950. Some notes on the Spotted Forest Thrush, *Turdus fischeri*. *Ostrich*, **21**: 58-61.—*Turdus fischeri belcheri*, new subspecies from near Blantyre, southern Nyasaland.
- BENSON, C. W. 1951. Breeding and other notes from Nyasaland and the Lundazi District of Northern Rhodesia. *Bull. Mus. Comp. Zoöl.*, **106** (2): 69-114.—An

- annotated list of 165 species of birds collected and observed. Special reference is made to breeding seasons and nesting habits, and nests and eggs of *Pseudoalcippe stierlingi stictigula*, *Tricholaema diadematum frontatum*, *Parus rufiventris masukuensis*, and *Nectarinia johnstoni salvadorii* are described for the first time.
- BENTON, ALLEN H. 1951. Effects on wildlife of DDT used for control of Dutch elm disease. *Journ. Wildl. Manag.*, **15** (1): 20-27.—Following application of 1.5-3 lbs. of DDT, certain species decreased 22 per cent on study area, and nestling mortality increased. Spraying before April 15 (in New Jersey) is recommended.
- BERGER, ANDREW J. 1951. The Cowbird and certain host species in Michigan. *Wilson Bull.*, **63** (1): 26-34, 3 tables.—A study of the egg-laying habits of the Cowbird, *Molothrus ater*, and its effect on the approximately 20 species of hosts observed.
- BERGSTROM, E. ALEXANDER. 1951. The South Windsor Bank Swallow colony. *Bird-Banding*, **22** (2): 54-63.—Six years of banding *Riparia riparia* in one colony. A table is given of return and recovery records for swallows in North America and Great Britain; percentages range from 0.5 to 11.5; the last being found in the present study.—M. M. N.
- BOND, GORMAN M., AND ROBERT E. STEWART. 1951. A new Swamp Sparrow from the Maryland coastal plain. *Wilson Bull.*, **63** (1): 38-40.—*Melospiza georgiana nigrescens* new subspecies (Nanticoke R. marshes, opp. Vienna, Wicomico Co., Maryland).
- BORELL, A. E. 1951. Russian olive as a wildlife food. *Journ. Wildl. Manag.*, **15** (1): 109-110.—Some 33 species of birds feed on *Elaeagnus augustifolia* in western United States.
- BRITISH ORNITHOLOGISTS UNION. 1951. Twenty-third report of the subcommittee on the Nomenclature and Records of the Occurrence of Rare Birds in the British Isles and on certain necessary changes in the Nomenclature of the B. O. U. List of British Birds. *Ibis*, **93** (2): 297-298.—*Sitta europaeus caesia* Wolf is accepted as the race occurring in the British Isles; *Tringa totanus britannicus* Mathews is accepted as the breeding race in the British Isles; the record of *Larus argentatus heuglini* Bree is accepted. The records for *Emberiza citrinella citrinella* Linnaeus, *Lanius excubitor melanopterus* Brehm, and *Anas acuta tzitzihoa* Vieillot are rejected. The following recently proposed subspecies were not accepted:—*Charadrius hiaticula harrisoni* Clancey; *Saxicola rubetra hesperophila* Clancey; *Anthus trivialis salomonseni* Clancey.—J. L. PETERS.
- BUSS, IRVEN O., ROLAND K. MEYER, AND CYRIL KABAT. 1951. Wisconsin pheasant reproduction studies based on ovulated follicle technique. *Journ. Wildl. Manag.*, **15** (1): 32-46.—Date of first egg can be learned from ovarian examination of *Phasianus colchicus*. Little variation in date of first egg was noted between years (perhaps implying day-length as controlling factor), but date of incubation did vary annually. Relatively high frequencies of dropped eggs are implied. On two nearby areas, marked variation occurred each year in mean date of hatching, average brood size, broodless hens, and young per adult, apparently as result of differences in range conditions.—J. J. H.
- CAMPBELL, BRUCE. 1951. Unusual features of the 1951 breeding season. *Brit. Birds*, **44** (6): 211.—Much of March and April was abnormally cold and wet, and breeding in Oxfordshire seems to have suffered as follows: long building periods, delays in egg dates, small clutch sizes, long "incubation" and nestling periods, unhatched eggs, high mortality among young, and enforced habitat changes due to flooding.—M. M. N.

- CHRISTIAN, JOHN J. 1951. The mammals of the Mazinaw Lake region of Ontario; their reproduction and population dynamics. *Ann. Carnegie Mus.*, **31**: 339-386.—Contains lists of breeding birds of several carefully described habitats.
- CLANCEY, P. A. 1950. Comments on the indigenous races of *Delichon urbica* (L.) occurring in Europe and North Africa. *Bonner Zool. Beitr.*, **1** (1): 39-42.—Recognizes four races in Europe and North Africa—*D. u. urbica*, *D. u. fenestrarum*, *D. u. meridionalis*, and perhaps a new race, unnamed, from Italy.
- COBURN, DON R., DAVID W. METZLER, AND RAY TREICHLER. 1951. A study of absorption and retention of lead in wild waterfowl in relation to clinical evidence of lead poisoning. *Journ. Wildl. Manag.*, **15** (2): 186-192.—Critical daily dosage in adult *Anas platyrhynchos* was 6-8 mg./kg. Diagnostic clinical symptoms are established for two dosing levels and relative survival times are set forth. Skeleton or liver or soft tissues are satisfactory as field samples for chemical analysis of lead poisoning.
- COHEN, EDWIN. 1951. Feeding of juvenile Goldfinch by another juvenile. *Brit. Birds*, **44** (5): 174.—Juvenile *Carduelis carduelis* feeding bird, apparently of second brood, August 4, 1950.
- COTT, HUGH B. 1951. The protective adaptations of birds' eggs, with special reference to relative palatability. *Bull. Brit. Orn. Club*, **71** (4): 23-24.
- CUNNINGHAM, J. M. 1951. The position of the Myna in 1950. *Natornis*, **4** (4): 66-67.—*Acridotheres tristis*. Additional information on distribution.
- DARLINGTON, ARNOLD. 1951. The use of mobile observers in the study of patterns of migration. *Brit. Birds*, **44** (5): 152-157.—In the study of the migration of *Apus apus* in 1950, 57 cyclists were used. Three maps show flight lines of swifts traced along the Cam Valley.
- DAVIS, JOHN. 1951. Notes on the nomenclature of the Brown Jay. *Condor*, **53**: 152-153.—Evidence in favor of recognizing two races of *Psilorhinus morio*. *P. m. morio* (Wagler) applies to the northern population, thus synonymizing *P. m. palliatus* van Rossem and restituting *P. m. fuliginosus* (Lesson) for the southern.
- DAVIS, T. A. W. 1951. Distraction-display of Common Partridge. *Brit. Birds*, **44** (6): 209.—A parent *Perdix perdix* with half-grown young did not "feign injury," but ran away with wings dropped and body feathers puffed, in the meantime giving a rat-like squeak.—M. M. N.
- DEIGNAN, H. G. 1951. The genus *Cuculus* in North America, a reconsideration. *Condor*, **53**: 154-155.—All three of the known examples are referable to *Cuculus saturatus horsfieldi* Moore rather than *C. c. bakeri* Hartert as now indicated in the A. O. U. check-list.
- DICKINSON, J. C. 1951. A twelve-year-old Sooty Tern in Arkansas. *Bird-Banding*, **22** (2): 79.—A *Sterna fuscata*, banded as an immature on June 23, 1938, in the Dry Tortugas, Florida, was found dead in Arkansas on September 4, 1950.
- DUFFY, ERIC. 1951. Field studies on the Fulmar *Fulmarus glacialis*. *Ibis*, **93** (2): 237-245.—In July, 1949, the author visited Fair Isle for two weeks of intensive study of Fulmars. Three pairs were marked by squirting the adult birds with dye. Brooding periods by individual parents are irregular, and the sexes do not share in this duty equally. Feeding is also irregular. Chicks spit oil at any intruder, including flying birds, within a radius of two or three feet and up to nearly the third week this includes the parents. During the early weeks of the chick's life it does not beg for food; instead the parent sidles up to the chick "cackling," then nibbles at the down on the head. Finally, the chick and the parent commence a sort of fencing with the bills, after which regurgitation takes place.—J. L. PETERS.

- EGGELING, W. J. 1951. Ringing palaeartic waders and other birds on Lake Victoria. *Ibis*, **93** (2): 312-313.—The operations were conducted on the beaches at Entebbe, Uganda. A clap net was first used, but due to difficulties of operation, the author worked at night using a flashlight and net with great success.
- EMERSON, K. C. 1951. A list of mallophaga from gallinaceous birds of North America. *Journ. Wildl. Manag.*, **15** (2): 193-195.
- EVANS, CHARLES D. 1951. A method of color marking young waterfowl. *Journ. Wildl. Manag.*, **15** (1): 101-103.—Six dyes were injected into duck eggs (at dosages equal to 0.4-0.6 gr. per kg. egg weight) 2 to 11 days before hatching, permitting field identification of individual broods 16-30 days after hatching.
- FERIANC, O. 1950. *Dryobates syriacus balcanicus* (GENGL. et STRES.) na Slovensku. *Sylvia*, **11-12** (2): 51-56, 2 figs., 1 map.—French summary.
- FLEAY, DAVID. 1951. Trapping Lyre birds for "resettlement." *Animal Kingdom*, **54** (2): 51-58, 6 photos.
- FRANK, FRITZ. 1950. Die Vögel von Opuk (Schwarzmeer-Gebiet). *Bonner Zool. Beitr.*, **1** (2-4): 144-214, 2 maps, 1 photo.—General discussion of the region of Opuk on the Black Sea, with a section on migration there, and species accounts.
- FRANKE, H. 1951. Von der Stimme der Türkentaube. *Natur und Land*, **37** (3): 48.
- GIBB, JOHN AND CHRISTINA. 1951. Waxwings in the winter of 1949-50. *Brit. Birds*, **44** (5): 158-163.—A map is given to show the distribution of some 2,000 *Bombycilla garrulus* in the British Isles in the winter of 1949-50. It was estimated that these birds ate much more than their own weight in berries each day.—M. M. N.
- GIBSON, J. A. 1951. The 1950 census of gannets (*Sula bassana*) on Ailsa Craig. *Journ. Animal Ecol.*, **20**: 87.—From 1936 to 1942 and from 1947 to 1949, the size of the population fluctuated considerably around a mean of about 5400 pairs, but in 1950 there was an astounding increase to about 6500 pairs.
- GLEGG, W. E. 1951. On seven eggs attributed to the Labrador Duck *Camptorhynchus labradorius*. *Ibis*, **93** (2): 305-306.—A duck's egg in the Rothchild collection labelled "Canard Labrador," which was acquired by Lord Rothschild when he purchased the Count Roedern oological collection in 1889, is believed to be either that of a Labrador Duck or a Black Duck, *Anas rubripes*. There are six eggs in the Dresden Museum (not examined by the author) attributed to the Labrador Duck, although proof of the correctness of the identification is lacking.—J. L. PETERS.
- GOODBODY, IVAN M. 1951. Inland Passage of Black Terns [*Chlidonias niger*] in the spring of 1950. *Brit. Birds*, **44** (5): 170-173.
- GRANT, C. H. B., AND C. W. MACKWORTH-PRAED. 1951. Notes on eastern African Birds. *Bull. Brit. Orn. Club*, **71** (3): 18-19.—*Apalis griseiceps chyulu* (van Someren) = *Apalis griseiceps* (Reichenow and Neumann); *Schoenicola brevirostris chyulu* (van Someren) = *Schoenicola brevirostris alexinae* (Heuglin); *Melocichla mentalis chyulu* (van Someren) = *Melocichla mentalis amaouroura* (Pelzeln).
- GRATER, RUSSELL K. 1951. Recent bird records from Mount Rainier National Park. *Condor*, **53**: 156-157.—Notes on 18 species previously unreported or constituting unusual observations.
- GULLION, GORDON W. 1951. Birds of the southern Willamette Valley, Oregon. *Condor*, **53**: 129-149.—Discussion of the environment and an annotated list of 212 species.
- GULLION, GORDON W. 1951. A new marker for waterfowl. *Journ. Wildl. Manag.*,

- 15 (2): 222-223.—"Vinylite" plastic, folded into 30 x 20 mm. pieces, was colored and pinned to large pinch of skin at base of skull.
- HACHISUKA, MASAUJI, AND TATSUO UDAGAWA. 1950. Contributions to the ornithology of Formosa. Part I. Quart. Journ. Taiwan Mus., 3 (4): 187-280, 1 map.—Historical review; extensive annotated bibliography; discussion of the environment on the island; discussion of the birds by families; migration.—H. I. F.
- HALE, JAMES B., AND ROBERT F. WENDT. 1951. Ruffed Grouse hatching dates in Wisconsin. Journ. Wildl. Manag., 15 (2): 195-199.—Of 69 broods sampled, hatching spread over nine weeks, but 31 of the broods hatched June 3-9, and 45 hatched May 27 to June 9. A lack of renesting is suggested.
- HALLER, KARL W. 1951. Observations on some New Mexican birds. Condor, 53: 155-156.—Eight species of uncommon or unusual occurrence recorded mostly from the vicinity of Albuquerque.
- HAMERSTROM, F. N., JR., AND FRANCES HAMERSTROM. 1951. Food of young raptors on the Edwin S. George Reserve. Wilson Bull., 63 (1): 16-25, 1 photo.—An analysis of food brought by the parents to young Cooper's Hawks, Red-tailed Hawks, and Barred Owls.
- HANN, C. 1951. Courtship feeding of Green Woodpecker in August. Brit. Birds, 44 (4): 134.—Adult female *Picus viridis* begging from male and being fed by him as both probed for ants.
- HANSON, HAROLD C. 1951. Notes on the artificial propagation of Wood Duck. Journ. Wildl. Manag., 15 (1): 68-72.—Hatching and rearing problems with *Aix sponsa* are described. Adequate moisture is needed during incubation; screen wire floors reduce infections of *Salmonella* bacteria. Night lights help young get insectivorous food.
- HARDY, FREDERICK C. 1951. Ruffed Grouse [*Bonasa umbellus*] nest predation by blacksnakes [*Elaphe obsoleta*]. Wilson Bull., 63 (1): 42-43, 1 photo.
- HARRISON, TOM. 1951. Two additions to the Borneo list. Ibis, 93 (2): 311-312.—*Oenanthe oe. oenanthe* (specimen) and *Larus ridibundus* subsp? (sight record).
- HAVERSCHMIDT, FR. 1951. Notes on the life history of *Picumnus minutissimus* in Surinam. Ibis, 93 (2): 196-200.—A nest-hole of this piculet was found before its completion. At that time two males and a female used the hole for roosting, but after some days of incubation the second male was no longer permitted to roost there. Incubation is believed to have been about 14 days and the fledging period 28 days. Only one young was reared; together with the parents, the three birds continued to roost in the nest cavity for 62 days.—J. L. PETERS.
- HAVERSCHMIDT, FR. 1951. The Cattle Egret *Bubulcus i. ibis* in British Guiana. Ibis, 93 (2): 310-311.
- HAVERSCHMIDT, FR. 1951. Notes on *Icterus nigrogularis* and *I. chrysocephalus* in Surinam. Wilson Bull., 63 (1): 45-47, 1 photo.
- HINDE, R. A. 1951. *Luscinola melanopogon*. Bull. Brit. Orn. Club, 71 (5): 30.—A reply to a criticism.
- HINDWOOD, K. A., AND A. R. MCGILL. 1951. The 'Derra Derra' 1950 camp-out of the R. A. O. U. Emu, 50 (4): 217-238, pls. 20-27, 1 fig. (map).—An account of annual camp-out Oct. 27-Nov. 6, 1950, of the R. A. O. U. following the annual meeting. The site of the camp-out was at Derra Derra station, about 150 miles inland from the east coast of Australia and 300 miles north of Sydney. There is an annotated list of 144 species recorded during the period.
- HOBBS, JOHN T. 1951. Distraction display of adult and diving of young Little Grebe. Brit. Birds, 44 (6): 207.—An adult *Podiceps ruficollis* churned through the water and flapped clumsily away at the approach of the writer; one young, a

- day old, and two hatched that morning dived and swam three to four feet under water.
- HOFFMANN, ALFRED. 1950. Der Indische Kuckuck (*Cuculus micropterus* Gould). Studien aus Peking und Nanking. Bonner Zool. Beitr., 1 (1): 21-30.—General notes.
- HURRELL, H. G. 1951. The movements of swifts in summer. Brit. Birds, 44 (5): 146-152.—Report on 20,000 *Apus apus* watched in 1950 under auspices of the British Trust for Ornithology.
- KEVE, A. 1948. Über die ornithologische Sammeltätigkeit im russischen Reich. Ann. Nat. Hist. Mus. Wien, 56: 77-129.—Species accounts.
- KLIMSTRA, W. D. 1951. Some factors affecting the growth and survival of multi-flora rose as cover for quail in Davis County, Iowa. Journ. Wildl. Manag., 15 (2): 158-190.
- KLUZ, ZDENĚK. 1950. Příspěvek k hnízdní biologii rorýse obecného evropského, *Micropus apus apus* (L.). Sylvia, 11-12 (2): 37-51, 5 tables, English summary.—Nest materials, arrival, eggs and breeding, hatching, weights and measurements, food, and parasites of the Swift.
- KOENIG, O. 1951. Das Aktionssystem der Bartmeise (*Panurus biarmicus* L.). Österr. Zool. Zeitschr., 3 (1): 1-82, 3 sketches, 15 photos.—First part only.
- LACK, DAVID AND ELIZABETH. 1951. Migration of insects and birds through a Pyrenean Pass. Journ. Animal Ecol., 20: 63-67.—A spectacular migration of small passerine birds, pigeons, butterflies of several species, one species of dragonfly, and one species of syrphid fly through a pass at 7500 feet.
- LOW, SETH. 1951. Cooperator participation for the 1950 bird banding year. Bird-Banding, 22 (2): 64-71.—List of banders with number of birds banded by each from May 1, 1949, through April 30, 1950.
- MACDONALD, J. D. 1951. Kestrels at sea. Ibis, 93 (2): 308-309, 1 text fig.
- MACDONALD, J. D., AND C. H. B. GRANT. 1951. On the author and reference of *Ardea lentiginosa*. Bull. Brit. Orn. Club, 70 (5): 30.—*Ardea lentiginosa* Rackett, in Pulteney's Cat. Bds. etc. of Dorsetshire, May 14, 1813, p. 14, antedates *Ardea lentiginosa* Montague, Suppl. Orn. Dict., June, 1813. Both descriptions based on the same specimen.—J. L. PETERS.
- MACKWORTH-PRAED, C. W., AND C. H. B. GRANT. 1951. On the races of the Wheatear *Oenanthe oenanthe* (Linnaeus) occurring in eastern Africa. Ibis, 93 (2): 234-236, 1 text fig. (map).—Three races recognized: *O. o. oenanthe* (Linn.) of which *Saxicola rostrata* Hemprich and Ehrenberg, *Saxicola oenanthoides* Vigors, and *O. o. integer* Clancey are considered synonyms; *O. o. libanotica* Hemprich and Ehrenberg of which *O. o. argentea* Lönnberg, *O. o. nivea* Weigold, and *O. o. virago* Meinertzhagen are considered synonyms; and *O. o. leucorhoa* Gmelin, with *O. o. schiöleri* Salomonsen in synonymy.—J. L. Peters.
- MADSEN, F. JENENIUS, AND R. SPÄRCK. 1950. On the feeding habits of the Southern Cormorant (*Phalacrocorax carbo sinensis* Shaw) in Denmark. Danish Rev. Game Biol., 1 (3): 45-76.—Stomachs and gullets of 365 birds were examined; 98 per cent of the food came from marine waters—herring 34, eel 22, viviparous blenny 22, and cod 10 per cent. The effect on commercial fishing is negligible. A record of Dutch Cormorant said to have been shot in Minnesota is quoted from Täning (1944). Although I did not check this reference (it is omitted in the bibliography), I believe the report is in error.—J. J. HICKEY.
- MADSEN, HOLGER. 1950. Studies on species of *Heterakis* (Nematodes) in birds. Danish Rev. Game Biol., 1 (3): 1-43.—Taxonomic analysis and review; list of some 80 host species of birds covers 10 orders from Rheiformes to Psittaciformes.

- MARCHANT, S. 1951. Calls of some forest birds, pt. 1. *Nigerian Field*, **16** (2): 70-79.—Notes on various species of West African birds with particular attention to their voices.
- MARIEN, DANIEL. 1951. Notes on some pheasants from southwestern Asia, with remarks on molt. *Amer. Mus. Novit.*, No. 1518: 1-25.—Taxonomic notes on forms of the genera *Lerwa*, *Ammoperdix*, *Tetraogallus*, and *Pavo*, based chiefly on specimens in the Walter Koelz collection. In a discussion of wing and tail molt it is tentatively concluded that attempts to divide the Phasianidae into subfamilies solely on this basis will probably be unsatisfactory or incorrect for certain species.
- MARSHALL, DAVID B. 1951. New bird records for western Nevada. *Condor*, **53**: 157-158.—Notes on 11 aquatic birds from the Lahontan Valley and Carson Sink area.
- MASON, A. G. 1951. Aggressive display of the Corn-Crake. *Brit. Birds*, **44** (5): 163-166.—Eight photographs of a male *Crex crex* before a mirror; three postures were shown, but not in any definite order.
- MCGILL, ARNOLD R. 1951. Proceedings of the Annual Congress of the R. A. O. U., Sydney, 1950. *Emu*, **50** (4): 240-250.
- MCKENZIE, H. R. 1951. Breeding of Kokako [Blue-wattled Crow, *Callaeas cinerea wilsoni*]. *Notornis*, **4** (4): 70-76.—In Moumoukai ranges. First photographs taken of this rare species.
- MEINERTZHAGEN [RICHARD]. 1951. Syrian Ostrich eggs. *Bull. Brit. Orn. Club.*, **71** (4): 22.
- MEINERTZHAGEN [RICHARD]. 1951. A new race of *Alectoris melanocephala* Rüppell. *Bull. Brit. Orn. Club*, **71** (5): 29.—*Alectoris melanocephala guichardi* (Raidat es Se'ar, El Hajar, Hadramaut), new subspecies.
- MILDENBERGER, HEINZ. 1950. Beiträge zur Oekologie und Brutbiologie des Schwarzkehlchens [*Saxicola torquata rubicola* (L.)]. *Bonner Zool. Beitr.*, **1** (1): 11-20, 2 figs.
- MILDENBERGER, HEINZ. 1950. Messungen von Höhe und Geschwindigkeit ziehender Vögel (*Columba palumbus*, *Corvus frugilegus*, *Grus grus*). *Bonner Zool. Beitr.*, **1** (1): 55-57.—Height and speed of flight, with wind directions and wind speeds involved.
- MILDENBERGER, HEINZ. 1950. Untersuchungen über die Siedlungsdichte der Vögel in der ackerbaulich genutzten Kulturlandschaft. *Bonner Zool. Beitr.*, **1** (2-4): 221-238, 1 fig., 15 tables.—Ecological study of populations of birds in areas occupied by human beings.
- MILLER, ALDEN H. 1951. A comparison of the avifaunas of Santa Cruz and Santa Rosa islands, California. *Condor*, **53**: 117-123.—Differences in the avifaunas are discussed along with possible factors involved and some systematic discussion. A list of the native terrestrial breeding birds (26 forms) common to the two is given together with miscellaneous records.
- MILLER, ALDEN H. 1951. The "rodent-run" of the Green-tailed Towhee. *Ibis*, **93** (2): 307-308.
- MOUNTFORT, G. R., WALTER E. HIGHAM, AND G. K. YEATES. 1951. Studies of some species rarely photographed. XXX. The Great Reed Warbler. *Brit. Birds*, **44** (6): 195-197.—Six fine photographs of *Acrocephalus arundinaceus* taken in the Camargue, France, with a note on habits by G. R. Mountfort.
- MURPHY, ROBERT C. 1951. The populations of the Wedge-tailed Shearwater (*Puffinus pacificus*). *Amer. Mus. Novit.*, No. 1512: 1-21.—A careful analysis of geographical variation in this widespread species of the Pacific and Indian oceans.

- The number of races is reduced to two. They are based on size, but the variation is so irregular as not to lend itself readily to the use of racial names. The same is true of the distribution of the white-breasted color phase, which is universal in some breeding colonies and, so far as known, completely absent in others. The sexes are of the same size in this species, though in some congeneric species the male is considerably larger than the female. The annual cycle is outlined for colonies both north and south of the equator.
- MURPHY, ROBERT C., AND SUSAN IRVING. 1951. A review of the Frigate-petrels (*Pelagodroma*). Amer. Mus. Novit., No. 1506: 1-17.—The subspecies of *P. marina* have characters correlated with circumpolar climatic zones, not with the relative proximity of the breeding colonies to each other. In most races females are slightly larger than males, an unusual situation among petrels. *Pelagodroma marina albiclunis* is a new subspecies from Sunday Island, Kermadecs.
- NEMEC, HELMUT. 1950. Beitrag zur Kenntnis des Trichterlappens der Vogelhypophyse. Österr. Zool. Zeitschr., 2 (4): 352-365, 8 figs.—Brief comparative study of gross structure of avian hypophysis.
- NEMEC, HELMUT. 1950. Über das zwischenhypophysere Bindegewebe bei Vögeln und einigen Amphibien. Österr. Zool. Zeitschr., 2 (4): 366-378.—Histological study of glandular structure.
- NERO, ROBERT W., AND JOHN T. EMLÉN, JR. 1951. An experimental study of territorial behavior in breeding Red-winged Blackbirds. Condor, 53: 105-116.—Nest-moving experiments from mid-May until mid-July in Wisconsin, and interpretations of the nature and maintenance of territorial and social relationships.
- ONEY, JOHN. 1951. Fall food habits of the Clapper Rail in Georgia. Journ. Wildl. Manag., 15 (1): 106-107.—669 gizzards of *Rallus longirostris* contained mostly crabs, and one snail.
- OWEN, J. H. 1951. Distraction display of Goldfinch [*Carduelis carduelis*]. Brit. Birds, 44 (4): 129-130.
- OWEN, J. H. 1951. Distraction display of Chaffinch [*Fringilla coelebs*]. Brit. Birds, 44 (4): 130.
- OWEN, J. H. 1951. Display of House Sparrow [*Passer domesticus*]. Brit. Birds, 44 (4): 130-131.
- OWEN, J. H. 1951. The flights of the Red-backed Shrike. Brit. Birds, 44 (5): 166-170.—Interesting description of hunting, defense, and mate-searching flights in *Lanius collurio*.
- PARKES, KENNETH C. 1951. The genetics of the Golden-winged × Blue-winged Warbler complex. Wilson Bull., 63 (1): 5-15, 1 pl.—The Blue-winged Warbler, *Vermivora pinus*, and Golden-winged Warbler, *V. chrysoptera*, frequently hybridize where their ranges overlap, producing a first generation hybrid, the Brewster's Warbler. The hybrids usually backcross with one or the other parental species. Several kinds of crosses between heterozygous individuals can produce the rare Lawrence's Warbler. The differences between the plumages of the two parent species and the hybrids are explained on the basis of three genes, in two of which there is incomplete dominance and two of which are linked.—J. T. TANNER.
- PETRIDES, GEORGE A. 1951. Notes on age determination in juvenal European quail. Journ. Wildl. Manag., 15 (1): 116-117.—Data on *Perdix perdix* and *Alectoris rufa* published by Bureau (1911, 1913) and said to be "virtually inaccessible." The original materials are actually still in print in bulletins sold or exchanged by the Museum of Natural History at Nantes.—J. J. H.
- PETRIDES, GEORGE A., AND W. B. DAVIS. 1951. Notes on the birds of Brazos

- County, Texas. Condor, **53**: 153-154.—Additional data gathered between 1940 and 1951 to supplement Davis' previous list (Condor, 42: 81-85), 1940.
- PINTO, OLIVÉRIO. 1950. Peter Lund e sua Contribuição a Ornitologia Brasileira. Papéis Avulsos, Dept. Zool., Secretaria da Agric., São Paulo, Brasil, **9** (18): 269-283.—Localities and dates between 1825 and 1845.
- PINTO, OLIVÉRIO. 1950. Miscelanea Ornitológica, V. Papéis Avulsos, Dept. Zool., Secretaria da Agric., São Paulo, Brasil, **9** (24): 361-365, 1 pl.—*Synallaxis ruficapilla infuscata*, new subsp. (Usina Nossa Senhora do Carmo, Vitória de Santo Antão, eastern Pernambuco, Brasil). Record and photograph of living individual of *Andorhynchus leari* Bonaparte (known until now only from zoo specimens from unknown localities in Brazil) obtained at Joazeiro, on the Rio São Francisco.
- PYTELKA, FRANK A. 1951. Generic placement of the Rufous-winged Sparrow. Wilson Bull., **63** (1): 47-48.—Reasons are given for placing the species presently named *Aimophila carpalis* in the genus *Spizella*.
- POULDING, R. H. 1951. The use of extruded plastic for colour marking. Brit. Birds, **44** (4): 126-127.—For banding young gulls.
- PRESTON, F. W. 1951. Egg-laying, incubation, and fledging periods of the Spotted Sandpiper (*Actitis macularia*). Wilson Bull., **63** (1): 43-44.
- RAND, R. W. 1951. The guano platforms of South West Africa. Ibis, **93** (2): 309-310.—Large platforms have been erected at Cape Cross and Walvis Bay, South West Africa, to serve as roosting places to attract the large number of sea birds frequenting the coast and to serve as "guano depositories." Cormorants of several species are the most numerous and most valuable "contributors."—J. L. PETERS.
- RENSCH, BERNHARD. 1950. Die Abhängigkeit der relativen Sexualdifferenz von der Körpergrösse. Bonner Zool. Beitr., **1** (1): 58-69, 3 figs., 4 tables.—Animals of large size show relatively greater sexual dimorphism than do closely related animals of smaller size.
- RICHDALE, L. E. 1951. Banding and marking Penguins. Bird-Banding, **22** (2): 47-54.
- ROBBINS, CHANDLER S., PAUL SPRINGER, AND CLARK G. WEBSTER. 1951. Effects of five-year DDT application on breeding bird population. Journ. Wildl. Manag., **15** (2): 213-216.—Annual applications at rate of 2 lbs./acre resulted in 26 per cent decrease in birds of bottomland forest.
- ROSICKY, B. 1949-1950. Blechy (Aphaniptera) jako paraziti našich ptáků. Sylvania, **11-12** (3): 61-66.—Summary of records of fleas on the birds of Czechoslovakia—11 species of fleas.
- ROWAN, A. N., H. F. I. ELLIOTT, AND M. K. ROWAN. 1951. The "spectacled" form of the Shoemaker *Procellaria aequinoctialis* in the Tristan da Cunha group. Ibis, **93** (2): 169-174, 1 text fig., 1 pl.—A breeding colony of the "*conspicillata*" form of *Procellaria aequinoctialis* was discovered on Inaccessible Island in the Tristan da Cunha group in the early 1920's. The authors visited this colony in mid September and late November, 1949, and in early May, 1950; adult birds were present in the colony on each of these visits, but eggs were found only in November, and the numbers of adults found in May fluctuated with the weather. All the members of the colony were of the "*conspicillata*" type and the variations in head markings are described and illustrated in a text figure.
- The nesting habits of the Inaccessible colony differ from those described by Murphy from South Georgia.

- Measurements of birds taken on Inaccessible are small (except exposed culmen) compared with those given by Murphy of birds from South Georgia, the South Atlantic, and the coasts of Argentina, Chile, and Perú. The authors conclude that the population of Inaccessible Island is not a color phase but a valid subspecies which should be known as *Procellaria aequinoctialis conspicillata* Gould [see also Southern, *Ibis*, 93 (2): 174-179, 1951].—J. L. PETERS.
- SCHAUB, B. M. 1951. A study of the behavior and population of Pine Siskins [*Spinus pinus*] at Northampton, Mass., February-May, 1947. *Bird-Banding*, 22 (2): 71-79.
- SCHÜZ, ERNST. 1950. Die Frühaufassung ostpreussischer Jungstörche in West-Deutschland durch die Vogelwarte Rossitten 1933-1936. *Bonner Zool. Beitr.*, 1 (2-4): 239-253, 3 figs.—Records of movements of young storks; distances; times involved; directions.
- SECKER, H. L. 1951. Habits of the Lesser Redpoll [*Carduelis cabaret*] in the Wellington Peninsula. *Notornis*, 4 (4): 63-66.—Distribution, food, display, habits.
- SHARP, WARD M. 1951. Observations on predator-prey relations between wild ducks, Trumpeter Swans and Golden Eagles. *Journ. Wildl. Manag.*, 15 (2): 224-226.—Two *Aquila chrysaetos* occasionally killed young *Cygnus buccinator* and found *Glaucionetta clangula* and *G. islandica* easy to capture in mid-air. Their stoops at *Anas platyrhynchos* were less successful. They seemed unable to take ducks from water.
- SHELFORD, V. E. 1951. Fluctuation of non-forest animal populations in the Upper Mississippi basin. *Ecol. Monog.*, 21 (2): 149-181.—Deals chiefly with chinch bugs and other insects but includes analysis of annual fluctuations of Bob-white populations in Wisconsin, Ohio, and Illinois in relation to weather. Good correlations are shown with solar ultraviolet and rainfall during the sensitive mating period of April.—S. C. K.
- SIMMONS, K. E. L. 1951. Distraction-display in the Kentish Plover. *Brit. Birds*, 44 (6): 181-187.—Mobile and static lure-displays and displacement-activities were studied in six pairs of *Leucopoliis alexandrinus* nesting in Egypt. Three sketches.
- SINGLETON, J. R. 1951. Production and utilization of waterfowl food plants on the East Texas Gulf Coast. *Journ. Wildl. Manag.*, 15 (1): 46-56.—Interesting yield data on various food plants. A change in food habits (from that reported by Martin and Uhler) is pointed out, natural foods being less used by ducks in favor of rice. Drainage now threatens this important winter range.
- SKEAD, C. J. 1950. A study of the Black-collared Barbet, *Lybius torquatus*, with notes on its parasitism by the Lesser Honeyguide, *Indicator minor*. *Ostrich*, 21: 84-96.
- SKUTCH, ALEXANDER F. 1951. Life history of Longuemare's Hermit Hummingbird. *Ibis*, 93 (2): 180-194.—*Phaethornis longuemareus saturatus* is a rather common resident of the humid tropical zone of Central America. Food consists primarily of nectar and small insects from the corollas of flowers and, in the instances of flowers with long and slender corolla tubes, the bird actually perforates the tissue of the tube with its bill to reach the nectar. The male takes no part either in nest-building or in the care of eggs and young, but a number of males gather at a "courtship assembly" point where they make known their position to the females by singing. The nest is placed beneath the drooping end of a leaf (usually a palm frond) and is composed of plant down, scales from tree-fern, shreds of inner bark, fragments of fern-fronds, and a few tufts of green moss, the whole

- not only bound together with cobweb but also attached to the leaf with this material. There appear to be two nesting periods annually, the first beginning in April, the second in November; incubation is from 15–16 days; nestling period 20–21 days; and nesting success probably less than 33 per cent.—J. L. PETERS.
- SMITH, K. D. 1951. The behaviour of some birds on the British list in their winter quarters or on migration in Southern Rhodesia. *Brit. Birds*, **44** (4): 113–117.
- SMITH, K. D. 1951. On the birds of Eritrea. *Ibis*, **93** (2): 201–233.—An account of Eritrea, its physiography, climate, and bird life based on six years' residence. The country is divided into four areas: (1) the Highland Plateau or Altopiano; (2) The Plateau slopes; (3) the inland regions at low altitudes which are further subdivided into the Western Plain or Bassopiano Occidentale, the Eastern Plain or Bassopiano Orientale, and the volcanic region of Dancalia, one of the hottest places in the world; and (4) the coast and islands. Characteristic species comprising the "bird communities" of the four areas are listed and arranged according to their diets. There are also notes on migrants (but no dates) and winter visitors.—J. L. PETERS.
- SORENSEN, J. H. 1950. The Light-mantled Sooty Albatross at Campbell Island. *Sci. Results New Zealand Sub-Antarctic Exped., 1941–45. Cape Expedition Series Bull. No. 8*: 1–30.—*Phoebetria palpebrata*. This report is the result of studies extending over the greater part of five years. All phases of the life history are covered: arrival and courtship, nests and eggs, incubation, behaviour, chicks from hatching to flight. There are 12 excellent photographs and a graph. The first birds were seen early in October. The construction of the nests commences towards the end of the month, the females doing most of the work. Each season a new nest is made, sometimes quite close to the old one. In 1942 the first egg was found on October 31. The incubation period is 63–67 days. Most chicks are hatched between January 3 and 6, and they leave the nests in May when 20 weeks old.—W. R. B. OLIVER.
- SOUTHERN, H. N. 1951. Addendum: the status of *Procellaria conspiciolata*. *Ibis*, **93** (2): 174–179.—A discussion of the possible type-locality of *conspiciolata*, resume of observations of this form and *aequinoctialis*, speculation on former range of *conspiciolata*, and lastly the conclusion that "rare spectacled birds may well turn up at other colonies, and, if their wing measurements fall within the range of normal *aequinoctialis*, it would strengthen the probability that a small gene-frequency for this character exists all over the range, and that at Inaccessible the wild-type allelomorph has been replaced, while at the same time a shorter-winged subspecies has been evolved." This conclusion leads the reviewer to suggest the desirability of a reexamination of the type of *Procellaria conspiciolata* in the Academy of Natural Sciences of Philadelphia with the view of finding how its measurements compare with those of *P. aequinoctialis* on the one hand and those of the Inaccessible Island population on the other. [see also Rowan, Elliott, and Rowan, *Ibis*, **93** (2): 169–174, 1951].—J. L. PETERS.
- STEINPARZ, KARL. 1950. Die Stauseen in Oberösterreich und ihre Auswirkungen auf die Vogelwelt. *Bonner Zool. Beitr.*, **1** (2–4): 215–220.
- STORR, G. M. 1951. Display in Sharp-tailed Sandpipers. *Emu*, **50** (4): 284–285.
- STRESEMANN, ERWIN. 1950. Die brasilianischen Vogelsammlungen des Grafen von Hoffmannsegg aus den Jahren 1800–1812. *Bonner Zool. Beitr.*, **1** (1): 43–51.
- STRESEMANN, ERWIN. 1950. Die brasilianischen Vogelsammlungen des Grafen von Hoffmannsegg aus den Jahren 1800–1812. *Bonner Zool. Beitr.*, **1** (2–4): 126–143.—Consists primarily of taxonomic equivalents of old nomenclature.

- SUTTON, GEORGE MIKSCHE. 1951. Subspecific status of the green jays of north-eastern Mexico and southern Texas. *Condor*, **53**: 124-128.—*Xanthoura yncas glaucescens* Ridgway is a synonym of *X. y. luxuosa* (Lesson).
- TARR, HAROLD E. 1951. Sea birds in Port Phillip Bay during stormy weather. *Emu*, **50** (4): 284.
- TIMMERMANN, G. 1951. Investigations on some Ischnoceran bird lice (Genus *Saemundssonina*) parasitic on waders. *Annals and Mag. Nat. Hist.* (12), **4** (4): 390-401.
- TOSCHI, AUGUSTO. 1950. Sulla biologia del *Lanius collaris humeralis* Stanley. [Field notes and studies on the East African fiscal.] *Lab. di zoologia applicata alla caccia*, Univ. Bologna, **2** (4): 65-136.—An intensive study of the life history and particularly the reproduction of this shrike. With English summary and subtitles for tables and graphs.
- TUCKER, B. W. 1951. [Obituary of]. *Ibis*, **93** (2): 300-305, portrait.
- VAN BENEDIN, A., AND J. S. HUXLEY. 1951. The aerial dawn chorus of the swallow. *Brit. Birds*, **44** (4): 127-128.—Before-dawn chorus of *Hirundo rustica* in the fall at Liège and in May in England.
- VERHEYEN, RENÉ. 1950. Sur la portée pratique du "Cline" en ornithologie systématique. *Bull. Inst. Royal Sci. Nat. Belgique*, **26** (60): 1-10.
- VLEUGEL, V. A. 1951. A case of Herring Gulls learning by experience to feed after the explosion of mines. *Brit. Birds*, **44** (5): 180.—In 1947 large numbers of *Larus argentatus* came to feed upon dead fish immediately after the explosion of mines by the Royal Dutch Navy.
- WETMORE, ALEXANDER. 1951. The original description of the fossil bird *Cryptornis antiquus*. *Condor*, **53**: 153.—Lambrecht's standard reference on fossil birds lists the species as *Cryptornis antiquus* Milne-Edwards, whereas it should be *Cryptornis antiquus* (Gervais).
- WILKINSON, A. DENBY. 1951. Hirundines following tractor and taking moths. *Brit. Birds*, **44** (6): 204.—On Sept. 23, 1950, Barn Swallows (*Hirundo rustica*), House-Martins (*Delichon urbica*) and Bank Swallows (*Riparia riparia*) followed a tractor and caught Silver Y moths (*Plusia gamma*).
- WILLIAMSON, KENNETH. 1951. Fair Isle Bird Observatory. Notes on selected species, Autumn, 1950. *Brit. Birds*, **44** (4): 117-122.
- WILLIAMSON, KENNETH. 1951. Aposematic behaviour of Snipe and Woodcock on being trapped. *Ibis*, **93** (2): 306-307.
- WOLTERS, H. E. 1950. Über einige Gattungen der *Estrildinae*. *Bonner Zool. Beitr.*, **1** (1): 31-38, 2 figs.—Primarily phylogenetic.